

New Jersey Greenhouse Gas Monitoring and Reporting Rule

Stakeholder Meeting

May 13, 2008

NJDEP Public Hearing Room

Background/Introduction

- Global Warming Response Act
 - Definition of Greenhouse Gas
 - Covered sources
 - Provide data to help build a complete statewide inventory
 - Track progress towards Global Warming Response Act (GWRA) Limits
 - Prepare biennial reports to the Legislature
- Need to maximize efficiency
 - Don't reinvent the wheel
 - Modify existing rules
 - Rely on existing data (consider burden of reporting)
 - NJ one of the first states with reporting of CO2 and methane that started in 2003 on Emission Statements
 - We already do a statewide inventory....but it can improve over time
- Other state and federal activities....these will evolve over time
 - California, New Mexico, Maine and others
 - EPA
 - The Climate Registry
 - Etc....

Summary of Changes...a roadmap:

- Expanded Definition of Greenhouse Gas from GWRA
- Proposed Emission Statement Changes (N.J.A.C. 7:27-21)
 - **Major facilities** report all GHG gases, zero thresholds for Non CO2 gases
 - **Non Major facilities** report Non-CO2 gases that are released above thresholds
 - Thresholds based on 2,500 tons/year CO2 equivalent
- Proposed Right to Know Changes (N.J.A.C. 7:1G)
 - **Fossil Fuels**: Prime suppliers report quantities of fossil fuels
 - Same data as currently reported to the EIA
 - DEP to calculate GHG releases
 - **Non CO2 GHG**: All facilities report storage ranges for Non-CO2 GHG gases above thresholds
 - Lower Thresholds below current 10,000 pounds

Definition of Greenhouse Gases

- **"Greenhouse gas"** means carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and any other gas or substance determined by the Department of Environmental Protection to be a significant contributor to the problem of global warming.
- Inventory estimates halogenated gases to increase from 3.4 million metric tons CO₂e (MMTCO₂e) in 2004 to 8.4 MMCO₂e in 2020 (7% of inventory)
- Research by the Intergovernmental Panel on Climate Change (IPCC)
- Fourth Assessment Report published in 2007

List of GHG gases other than CO2 (Table 2.14 in IPCC report)

Gas
Methane
Nitrous oxide
Nitrogen trifluoride
trifluoromethylsulphur pentafluoride
Sulphur hexafluoride
Hydrofluorocarbons
HFC-23
HFC-32
HFC-125
HFC-134a
HFC-143a
HFC-152a
HFC-227ea
HFC-236fa
HFC-245fa
HFC-365mfc
HFC-43-10mee
Perfluorocarbons
PFC-14
PFC-116
PFC-218
PFC-318
PFC-3-1-10
PFC-4-1-12
PFC-5-1-14
PFC-9-1-18

Gas
Ethers and Halogenated Ethers
HFE-125
HFE-134
HFE-143a
HCFE-235da2
HFE-245cb2
HFE-245fa2
HFE-254cb2
HFE-347mcc3
HFE-347pcf2
HFE-356pcc3
HFE-449sl (HFE-7100)
HFE-569sf2 (HFE-7200)
HFE-43-10pccc124 (H-Galden 1040x)
HFE-236ca12 (HG-10)
HFE-338pcc13 (HG-01)
Perfluoropolyethers
PFPMIE

Storage/Use of Non CO2 GHG Gases in NJ

- What do we know about the use of these gases in NJ?
- Reviewed storage data reported under the Worker and Community Right to Know regulations
 - Data for 2006 (10,000 pound storage threshold)
 - Also looked at 1993 (zero threshold)

Greenhouse Gas	Uses	# RTK Reporters in 1993	# RTK Reporters in 2006
HYDROFLUOROCARBONS			
HFC-152a	Refrigeration	44	18
HFC-143a	Refrigeration	31	1
HFC-23	Refrigeration	17	2
PERFLUORINATED COMPOUNDS			
SF6	Electrical equipment	68	6
PFC-14	solvent	12	1
PFC-116	solvent	8	2
Total Reports		180	30
Number of Facilities		140	25

Global Warming Response Act Covered Sources

5. a. No later than January 1, 2009, the department shall adopt, pursuant to the "Administrative Procedure Act," P.L.1968, c.410 (C.52:14B-1 et seq.), rules and regulations establishing a greenhouse gas emissions monitoring and reporting program to monitor and report Statewide greenhouse gas emissions.

b. The rules and regulations adopted pursuant to subsection a. of this section shall identify all significant sources of Statewide greenhouse gas emissions and shall provide for, but need not be limited to, the following:

(1) monitoring and reporting of existing emissions and changes in emissions over time from the sources identified by the department;

(2) reporting the levels of those emissions and changes in those emissions levels annually, commencing on January 1, 2009; and

(3) monitoring progress toward the 2020 limit and the 2050 limit.

c. Pursuant to the rules and regulations adopted pursuant to subsection a. of this section, the department shall require reporting of the greenhouse gas emissions:

(1) associated with fossil fuels used in the State, as reported by entities that are manufacturers and distributors of fossil fuels, which may include, but need not be limited to, oil refineries, oil storage facilities, natural gas pipelines, and fuel wholesale and retail distributors;

(2) from any entity generating electricity in the State and from any entity that generates electricity outside the State that is delivered for end use in the State. With respect to electricity generated outside the State and imported into the State, the department shall determine the emissions from that generation by subtracting the kilowatt-hours of electricity generated in the State from the kilowatt-hours of electricity consumed in the State, and multiplying the difference by a default emissions rate determined by the department;

(3) from any gas public utility as defined in section 3 of P.L.1999, c.23 (C.48:3-51); and

(4) from any additional entities that are **significant emitters of greenhouse gases**, as determined by the department, and as appropriate to enable the department to monitor compliance with progress toward the 2020 limit and the 2050 limit.

GWRA sources

- (1) Fossil fuel manufacturers and distributors
- (2) Electricity Generation
 - In state
 - Out of state (by calculation)
- (3) Natural Gas Utilities
- (4) “Other” sources

DRAFT New Jersey Greenhouse Gas Emissions; Estimates and Projections;

Millions of Metric Tons CO2 Equivalent

Sector	Sub-sector	2004	2020 BAU	2020 w. planned actions	Comments
Transportation	On-road gasoline	38.3	44.3	31.3	projections sensitive to VMT growth
	On-road diesel	7.5	11	10.5	projections sensitive to VMT growth
	Aviation	1	1	1	primarily jet fuel, estimated in-state use only
	Marine	1.5	1.8	1.8	diesel & residual; projections do not include port expansion
	Railroad & Other	0.5	0.6	0.6	
Electricity	In-state	19	21.5	18.7	2020 w. actions set equal to RGGI cap
	In-state, from MSW	1.3	1.3	1.3	
	Imported	13.4	20.3	4.8	2020 w. actions is minus out-of-state renewables from RPS
Residential	Space heat	14.2	15.5	12.4	
	Other combustion	3.4	3.8	3	
Commercial	Space heat	6.1	5.7	4.6	
	Other combustion	4.8	3.6	2.9	
Industrial	Space heat	0.7	0.4	0.3	
	Other combustion	17.1	15.3	13.9	
Halogenated gases (ex. SF ₆)		3.4	8.4	8.4	
SF ₆		0.3	0.1	0.1	
Industrial non-fuel related		0.1	0.1	0.1	
Agriculture		0.5	0.4	0.4	
Natural gas T&D		2	2.1	2.1	
Landfills, POTWs		6.8	6	6	Includes out-of-state LFs taking NJ MSW
Released thru land clearing		1.1	1.1	1.1	
Sequestered by forests		-6.8	-5.9	-5.9	
Totals		136	158	119	

Outline of Reporting

GHG Reporting

- Fossil Fuel Manufacturers And Distributors (1)
- Natural gas Utilities (3)

Double counting in Com/Ind/Elec.

Stationary sources (2) & (4)

GHG Inventory Sector

Transportation

Residential

Commercial and Industrial Fuel Use

In-state Electricity

Non Co2 Gases (SF6, HFC, etc)

Out of state Electricity Generation (2)
- Land clearing
- Forest sequestration
- Non-CO2 Gases (residential. Trans)

Reporting by Stationary Sources

- Amend Emission Statement Rule (N.J.A.C. 7:27-21)
- Existing Reporting
 - Major sources:
 - Above Table 1 Pollutant applicability Thresholds or VOC above 25 tons/year
 - Report CO₂ and methane
 - No minimum reporting threshold (zero threshold)
 - 320 facilities were “major” facilities in 2006
 - Non-Major sources
 - Below Table 1 Pollutant applicability Thresholds and VOC between 10 - 25 tons/year
 - **DO NOT** report CO₂ and methane
 - 308 facilities were “non major” in 2006
- Proposed rules also treat Majors and Non Major differently

Major Sources Reporting Under Emission Statements

Existing Reporting

Potential New Reporting

Major Facilities

- Exceed Table 1 Pollutant threshold, or
- VOC above 25 tons/yr

- Report **CO2 and methane**
- Zero reporting threshold

- Report **all GHG gases**
- Zero reporting threshold

Example:

- Electric utility reports NOx, SO2 above thresholds.
- Currently only report CO2 and methane.
- Under proposed rule they would report CO2, methane, HFC from cooling units and SF6 from electrical equipment, and other GHG gases regardless of quantity released.

Non-Major sources

Thresholds (applicability and reporting) for GHGs gases other than CO2

- Use Global Warming Potentials (GWP) to calculate thresholds for greenhouse gases other than CO2
 - Global Warming Potential is a measure of the radiative efficiency (heat absorbing ability) of the gas compared to CO2. Can calculate CO2 equivalent using the GWP
- Basis for potential new thresholds
 - 100 tons/yr methane released from a landfill
 - Methane has a GWP of 25 for a CO2 equivalent of 2,500 tons/year
 - Thresholds for other GHG gases equal to 2,500 tons/year CO2 equivalent of
 - Consistent with other parts of air rule for 100 tons/yr of “any other air contaminant”

Potential thresholds for Non-CO2 greenhouse gases

Gas	Reporting Threshold (Tons/yr)	Reporting Threshold (Pounds/yr)
Methane	100	
Nitrous oxide	8	
Nitrogen trifluoride		295
trifluoromethylsulphur pentafluoride		285
Sulphur hexafluoride		220
Hydrofluorocarbons		
HFC-23		340
HFC-32		7,410
HFC-125		1,430
HFC-134a		3,500
HFC-143a		1,120
HFC-152a		40,325
HFC-227ea		1,555
HFC-236fa		510
HFC-245fa		4,855
HFC-365mfc		6,300
HFC-43-10mee		3,050
Perfluorocarbons		
PFC-14		680
PFC-116		410
PFC-218		570
PFC-318		485
PFC-3-1-10		565
PFC-4-1-12		550
PFC-5-1-14		540
PFC-9-1-18		670

Gas	Reporting Threshold (Tons/yr)	Reporting Threshold (Pounds/yr)
Ethers and Halogenated Ethers		
HFE-125		340
HFE-134		795
HFE-143a		6,615
HCFE-235da2		14,290
HFE-245cb2		7,065
HFE-245fa2		7,590
HFE-254cb2		13,930
HFE-347mcc3		8,700
HFE-347pcf2		8,625
HFE-356pcc3		45,455
HFE-449sl (HFE-7100)		16,835
HFE-569sf2 (HFE-7200)		84,750
HFE-43-10pccc124 (H-Galden 1040x)		2,675
HFE-236ca12 (HG-10)		1,790
HFE-338pcc13 (HG-01)		3,335
Perfluoropolyethers		
PFPMIE		485

- Thresholds equal to 2,500 tons CO2 equivalent
- Global Warming Potentials based on 100 year Time Horizon
- Still considering options for mixtures

Non-Major Sources Reporting Under Emission Statements

Existing Reporting

Potential New Reporting

Non Major Facilities

- Below Table 1 Pollutant thresholds
- VOC below 25 tons/yr but over 10
- Non CO2 GHG over new threshold

- Not required to report CO2 or methane

- report any non-CO2 GHG over proposed threshold

Example 1: A landfill currently does not report. The landfill releases methane at 120 tons/year. Under the proposed rule they would be a new reporter

Example 2: An electrical transformer/switching station releases over 220 pounds of SF6 per year. This would be a new reporter.

Example 3: An Industrial facility currently reports 15 tons/yr VOC as a non major source. A large process refrigeration unit releases over 3,500 pounds of HFC134a. The facility would report both VOC and HFC134a.

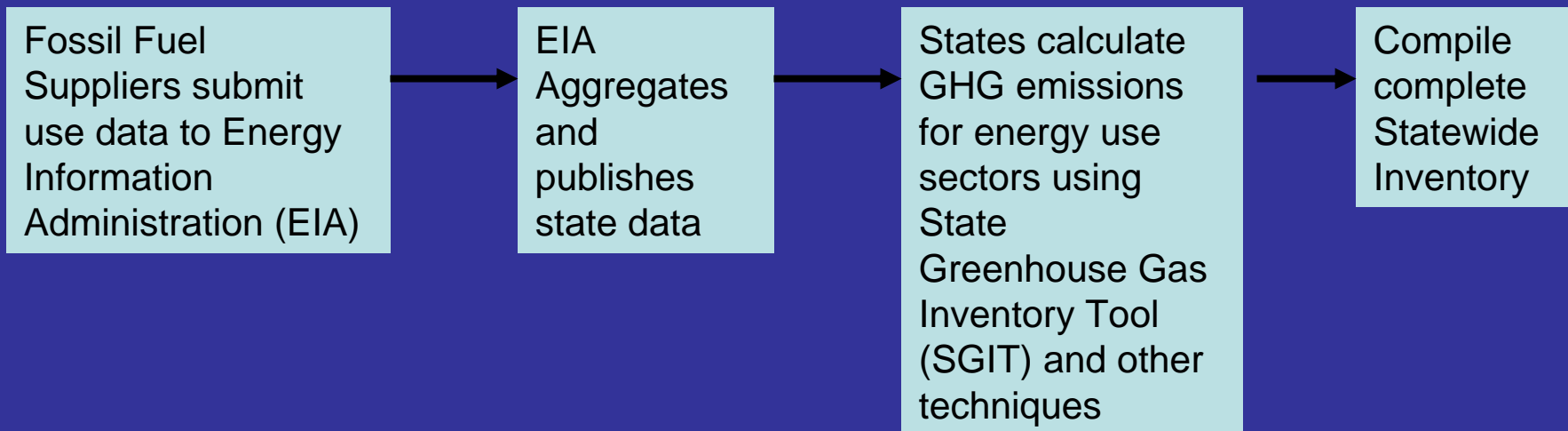
Not planning for a CO2 threshold

- Non-Major facilities (as currently defined) likely account for a small percentage of CO2
 - Analysis of NOX emissions shows that 320 major facilities account for over 98% of releases currently reported on emission statements
 - 308 Non major facilities account for 2 % of NOX releases
 - Percentages for CO2 are likely similar
- Reporting by fossil fuel manufacturers and distributors can account for these and other CO2 release more efficiently

Reporting by Fossil Fuel Manufacturers/Distributors

- Many opportunities to coordinate with existing reporting
 - Federal Reporting (Energy Information Administration, IRS)
 - State Reporting
 - Motor Fuels Tax
 - Past reporting to the Board of Public Utilities (52:27F-18)
 - Existing reporting to NJDEP (storage quantities on RTK)

Existing Reporting/Inventory Process

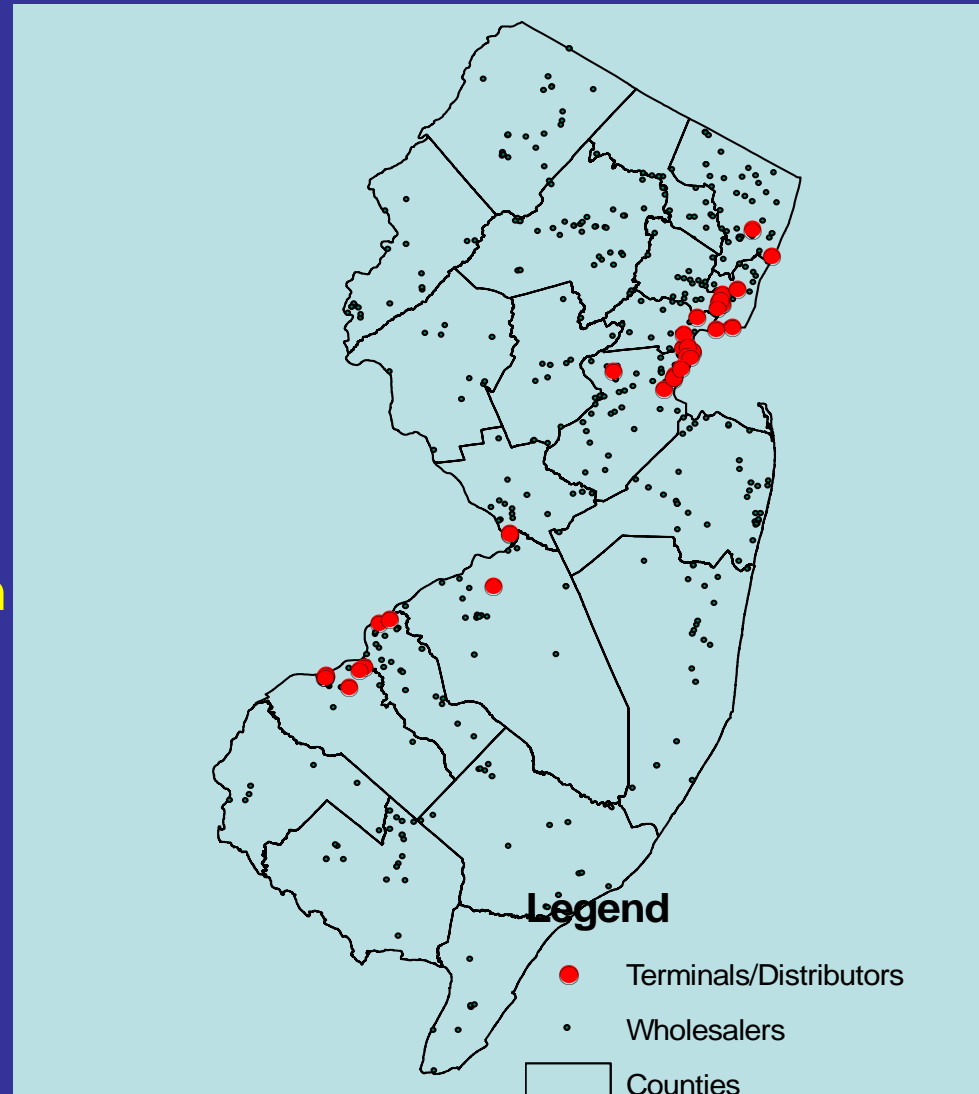


Reporting by Fossil Fuel Manufacturers/Distributors

- Considering two different approaches:
 - OPTION 1: Have Manufacturers/Distributors calculate greenhouse gas releases associated with product use (Emission Statement)
 - OPTION 2: Have DEP calculate releases (Right to Know)
 - Consistent with existing inventory process where quantities sold/used reported to EIA and DEP calculates releases
 - Have manufacturers/distributors report EIA-type data to DEP
- Currently focusing on Option 2
 - Fits with existing procedures
 - More efficient for covered facilities

Existing Reporting by manufacturers/distributors of Fossil fuels

- Federal reporting to IRS
 - Terminal Operators Report (Form 720-TO and 720-CS)
 - Approximately 40 NJ “Terminals”
- Federal Reporting to EIA
 - Form 821 Fuel Oil and Kerosene
 - Form 782C “Prime Suppliers”
- State Reporting to Div. of Taxation
 - Motor Fuels Distributor Report
 - Similar to “Position holders” under the federal reporting
 - Approximately 75 Motor Fuel “Distributors”
- Next level in distribution chain
 - Approximately 180 “wholesalers” licensed by taxation
 - 350 individual sites in related SICs



Existing Reporting by Fossil Fuel Manufacturers to DEP

NAICS Code	NAICS Description	Emission Statement	Right To Know
221210	Natural gas distribution	4	4
324110	Petroleum refineries	6	6
424710	Petroleum bulk stations and terminals	7	29
424720	Petroleum and Petroleum Products Merchant Wholesalers (except Bulk Stations and Terminals)	1	256
454311	Heating Oil Dealers	0	29
454312	Liquefied Petroleum Gas (Bottled Gas) Dealers	0	20
486210	Pipeline transportation of natural gas	6	13
TOTAL		24	357

- Only a few report to the Emission Statement program
 - Would require adding facilities to this program
- All/Most distributors report to the RTK program
 - Existing reporting is established

Proposed Reporting by Fossil Fuel Distributors under RTK

- “Who” should report:
 - “Prime Suppliers” as they are defined under the EIA Form 782C
 - Estimated to include about 40 to 50 NJ sites
- “What” should be reported
 - Portion of existing data reported on 782C and 821
 - Annual data only
 - Broken down by energy use sector
- “How” should it be reported
 - Revised RTK forms and electronic submission
 - Prefer to have electronic submission...but not sure if it could be implemented first year

Natural Gas Utilities and Pipelines

- Only a few companies
 - Four gas utilities
 - Four pipeline companies
- Existing State reporting
 - All companies currently report on Emission Statement
 - For Compressor sites only, not associated with product use
 - Monthly reports to BPU
 - Includes products in energy use sectors
- Considering minor changes to BPU reporting
 - Consistency with EIA
 - BPU, DEP will use the same data

Proposed changes for Non-CO2 GHG Under RTK

- Considering different options to get a better handle on this universe of gases
 - Focus on distribution like fossil fuels
 - Focus on release reporting
 - Focus on storage, like existing RTK reporting
- Currently focusing on RTK storage reporting
 - Simpler to implement
 - Help improve inventory estimates
 - Considering lowering the 10,000 lb threshold for non-CO2 GHGs
 - 30 lb threshold for non returnable containers
 - 125 lb threshold, next biggest size container routinely used

Two changes in emission statement rule not related to Greenhouse gases

- Both include reporting at the source operation level instead of the facility level
- PM2.5 and ammonia
 - Needed to comply with the EPA Consolidated Emissions Reporting Rule (Federal Register / Vol. 67, No. 111 / Monday, June 10, 2002, 40 CFR Part 51.
- TAPs listed in Appendix 1, Table 1 of N.J.A.C. 7:27
 - DEP reports source level TAP to EPA National Emission Inventory
 - Improve ability to assess risk

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Schedule

